(a) 

(b) 

(c) 

(d) 

\[ \text{KMnO}_4 \xrightarrow{\text{NaOH, H}_2\text{O}} \]

(e) 

\[ + \]

\[ + \]
(a) \( \text{C}_{18}\text{H}_{16}\text{O} \)

- Draw one of the enantiomers

- Achiral

(b) \( \text{H}_3\text{C} \text{O}\text{C} = \text{C} = \text{C} = \text{H} \)

\( \text{H}_3\text{C} \text{O}\text{C} = \text{C} = \text{C} = \text{C} - \text{Br} \)
(a) ![Structure](image1)

(b) **complete ionic product**

(b) **uncharged organic product**

(c) ![Structure](image2)

(d) 1) $\text{B}_2\text{H}_6$

   2) $\text{H}_2\text{O}_2, \text{NaOH}$

(e) **draw one of two possible diastereomers**

![Structure](image3)
(a) $S_N1$

(b) 

(c) remain the same.

Briefly explain why: In the $S_N1$ mechanism, forming the C+ is the rate determining step, and the azide is not involved, and so its concentration does not affect the rate.

(d) increase.

Briefly explain why: In the $S_N1$ mechanism, forming the C+ is the rate determining step, which is the ionization of compound A, and so its concentration is proportional to the reaction rate.

(e) 1-phenyl-1-cyclopentene